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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,018

06/15/2006

Nobuyuki Ito

CU-4878 RJS

6101

26530 7590 04/29/2008

LADAS & PARRY LLP  
224 SOUTH MICHIGAN AVENUE  
SUITE 1600  
CHICAGO, IL 60604

EXAMINER

GREEN, TRACIE Y

ART UNIT

PAPER NUMBER

2879

MAIL DATE

DELIVERY MODE

04/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,018	<b>Applicant(s)</b> ITO, NOBUYUKI	
	<b>Examiner</b> TRACIE Y. GREEN	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08/02/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/02/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

2. The abstract of the disclosure is objected to because it exceeds the 150 word requirement. Correction is required. See MPEP § 608.01(b).
3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

4. Claims 31, 33, and 35 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim shall refer to other claims in the alternative only. See MPEP § 608.01(n). For purposes of examination, examiner has assumed the following claim 31 is assumed to be dependent upon 29, claim 33 is assumed to be dependent upon 32 and Claim 35 is assumed to be dependent upon 34. Office action on merits follows

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 15, and 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Takako (Japanese Patent 2002-237382, machine translation).

**Regarding claim 1,** Takako teaches an organic functional element (Drawing 2) comprising at least a plurality of electrodes(2,5) and an organic material layer (3), wherein at least one of the electrodes (Table 1, lines 16) is composed of a metal having a melting point not higher than a temperature that is higher by 30.degree. C than a glass transition temperature of the organic material layer (Paragraph 32, lines 1-3) *(Examiner note: melting point of Sn-Bi=138 degrees see, organic material (MEH-PPV) glass transition temperature 65-108 degrees C)*

**Regarding claim 2,** Takako teaches an organic functional element (Drawing 2) comprising at least a plurality of electrodes (2,5) and an organic material layer (3), wherein at least one of the electrodes (Table 1, lines 16) is composed of a metal having a melting point of 70.degree. C. or higher that is higher by 30.degree. C. than a glass transition temperature of the organic material layer (Paragraph 29, lines 1-3)

**Regarding claim 3,** Takako teaches an organic functional element (Drawing 2) comprising at least a plurality of electrodes (2,5) and an organic material layer (3), wherein at least one of the electrodes (Table 1, lines 11) is composed of a metal having a melting point of 70.degree. C. or higher to 160.degree. C. or lower. (Paragraph 29, lines 1-3) *(Examiner note: Indium melting temperature =156.61)*

**Regarding claim 4,** Takako teaches wherein the metal constituting the electrode is an alloy of Bi and at least one kind of other metals (Table 1, lines 9, 10 or 17)

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**Regarding claim 5**, Takako teaches wherein a Bi component in the metal constituting the electrode is greater than that of at least one kind of other metals (Table 1, lines 11)

**Regarding claim 6**, Takako teaches, wherein the metal constituting the electrode is an alloy composed of Bi and one, two, three, four or five kinds of metals selected from a group composed of Sn, Pb, Cd, Sb and In. (Table 1, lines 2)

**Regarding claim 7**, Takako teaches wherein the metal constituting the electrode is an alloy of Sn and Bi, and a Sn component is greater than a Bi component. . (Table 1, lines 8-10)

**Regarding claim 8**, Takako teaches wherein the metal constituting the electrode is an alloy of In and Sn (Table 1, lines 11)

**Regarding claim 9**, Takako teaches an organic functional element (Drawing 2) comprising at least a plurality of electrodes(2,5) and an organic material layer (3), wherein at least one of the electrode is composed of a metal containing an alkali metal or an alkaline earth metal, and a melting point of the metal is 200.degree. C. or lower Paragraph 6, lines 1-4).

**Regarding claim 15**, Takako teaches wherein the alkali metal or the alkaline earth metal is selected from a group composed of Ca, Li, Cs, Mg and Sr (Paragraph 6)

**Regarding claim 29**, Takako teaches wherein the organic functional element is an organic EL element. (Paragraph 15, lines 1-3)

**Regarding claim 30**, Takako teaches wherein the electrode is a cathode (Paragraph 29, lines 1-2)

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takako (Japanese Patent 2002-237382, machine translation) in view of Cocks (US Patent 5,120,498).

**Regarding Claims 10 and 12**, as to claims 10 and 12, the composition that is disclosed is drawn to an electrode, such is an intended use. The composition disclosed within the prior art pertains to a material which conducts electricity thus is performing like an electrode.

Takako teaches the organic functional element set forth above (see rejections claims 1 and 9) above. Takako is silent regarding wherein the metal constituting the electrode is an alloy composed of Bi and at least one kind of other metals, a Bi component is greater than that of the at least one kind of other metals, and containing both: one, two, three, four, five or six kinds of metals selected from a group composed of Sn, Pb, Cd, Sb, In and Ag; and at least one kind of the alkali metal or the alkaline earth metal (claim 10) ; or wherein the metal constituting the electrode is an alloy of In and Sn and contains at least one kind of the alkali metal or the alkaline earth metal (claim 12).

In the same field of endeavor of organic devices, Cocks teaches wherein the metal constituting the electrode is an alloy composed of Bi and at least one kind of other metals, a Bi component is greater than that of the at least one kind of other metals, and containing both: one, two, three, four, five or six kinds of metals selected from a group composed of Sn, Pb, Cd, Sb, In and Ag; and at least one kind of the alkali metal or the alkaline earth metal (Column 5, lines 40-45) ; or wherein the metal constituting the electrode is an alloy of In and Sn and contains at least one kind of the alkali metal or the alkaline earth metal (Column 3, liners 5-10) in order to provide a device with a conductor which adheres well to glass and simplifies manufacturing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the organic function layer of Takako wherein the metal constituting the electrode is an alloy composed of Bi and at least one kind of other metals, a Bi component is greater than that of the at least one kind of other metals, and containing both: one, two, three, four, five or six kinds of metals selected from a group composed of Sn, Pb, Cd, Sb, In and Ag; and at least one kind of the alkali metal or the alkaline earth metal ; or wherein the metal constituting the electrode is an alloy of In and Sn and contains at least one kind of the alkali metal or the alkaline earth metal in order to provide a device with a conductor which adheres well to glass and simplifies manufacturing as taught by Cocks.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takako (Japanese Patent 2002-237382, machine translation) in view of Eagar et al, (US Patent 4,810,308).

As to claim 11, the composition that is disclosed is drawn to an electrode, such is an intended use. The composition disclosed within the prior art pertains various types of alloys.

Takako teaches the organic functional element set forth above (see rejections claims 1 and 9) above. Takako is silent regarding wherein the metal constituting the electrode is an alloy of Sn and Bi, wherein a Sn component is greater than a Bi component and contains at least one kind of the alkali metal or the alkaline earth metal.

In the same field of endeavor of organic devices, Egar et al. teaches wherein the metal constituting the electrode is an alloy of Sn and Bi, wherein a Sn component is greater than a Bi component and contains at least one kind of the alkali metal or the alkaline earth metal (Table 3, lines B, E, or F) in order to provide a device which is easier to both manufacture and do rework if needed (Column 2, lines 40-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the organic function element of Takako wherein the metal constituting the electrode is an alloy of Sn and Bi, wherein a Sn component is greater than a Bi component and contains at least one kind of the alkali metal or the alkaline earth metal in order to provide a device which is easier to both manufacture and do rework if needed as taught by Egar et al.

6. Claim 13-14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takako (Japanese Patent 2002-237382, machine translation) in view of Egar et al, (US Patent 4,810,308).



**Regarding claims 13-14**, Takako teaches the organic functional element set forth above (see rejections claims 1 and 9) above. Takako is silent regarding wherein one kind of the alkali metal or the alkaline earth metal is 0.01 to 1% by volume, preferably 0.05 to 0.5% by volume (claim 13) or 0.01 to 1% by weight, preferably 0.05 to 0.5% by weight.

In the same field of endeavor, Tang et al. teaches wherein one kind of the alkali metal or the alkaline earth metal is 0.01 to 1% by volume, preferably 0.05 to 0.5% by volume (Column 9, lines 1-5) or 0.01 to 1% by weight, preferably 0.05 to 0.5% by weight (Column 9, lines 1-5) in order to provide a device which increased stability within the electrode, increased lifetime and lower operating voltage (Column 4, lines 10-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the organic function element of Takako wherein one kind of the alkali metal or the alkaline earth metal is 0.01 to 1% by volume, preferably 0.05 to 0.5% by volume or 0.01 to 1% by weight, preferably 0.05 to 0.5% by weight in order to provide a device which increased stability within the electrode, increased lifetime and lower operating voltage as taught by Tang et al.

7. Claim 16-17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takako (Japanese Patent 2002-237382, machine translation) in view of Vleggaar et al. (US Patent 6,160,346).

**Regarding claims 16-17**, Takako teaches the organic functional element set forth above (see rejections claims 1 and 9) above. Takako is silent regarding wherein a gap made between the organic material layer and a base material having a concave

part opposite to the organic material layer is filled and formed with the metal (claim 16) and wherein the gap has one or more opening parts, and the opening parts are sealed with a hardened metal (claim 17).

In the same field of endeavor of organic devices, Vleggaar et al. teaches (Figure 1 or 2) wherein a gap made between the organic material layer (4) and a base material (8) having a concave part (8, 9) opposite to the organic material layer (4) is filled and formed with the metal (5,9) and wherein the gap (Figure 2, 34) has one or more opening parts, and the opening parts are sealed with a hardened metal (29,33) in order to provide is to provide an EL device which is compact and robust under normal production and operating conditions, and which exhibits a satisfactory resistance to mechanical and varying thermal loads (Column 2, lines 15-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the organic function element of Takako wherein a gap made between the organic material layer and a base material having a concave part opposite to the organic material layer is filled and formed with the metal (claim 16) and wherein the gap has one or more opening parts, and the opening parts are sealed with a hardened metal in order to provide is to provide an EL device which is compact and robust under normal production and operating conditions, and which exhibits a satisfactory resistance to mechanical and varying thermal loads as taught by Vleggaar et al.

8. Claim 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takako (Japanese Patent 2002-237382, machine translation) in view of Hosokawa (US 2001/0011783 A1).

Takako teaches the organic functional element set forth above (see rejections claims 1 and 9) above. Takako is silent regarding wherein the organic functional element is an organic semiconductor element (claim 32); and wherein the organic functional element is an organic TFT element (claim 34).

In the same field of endeavor of organic devices, Hosokawa teaches (Figures 7 or 8) wherein the organic functional element is an organic semiconductor element (10, 14 and Paragraph 32); and wherein the organic functional element is an organic TFT element (10, 14 and Paragraph 71) in order to provide a device with a reduction in the current density thus leading to prolonged operation (Paragraph 34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the organic function element of Takako wherein the organic functional element is an organic semiconductor element; and wherein the organic functional element is an organic TFT element in order to provide a device with a reduction in the current density thus leading to prolonged operation as taught by Hosokawa

**Regarding claims 18-28, 31, 33 and 35,** These claims are drawn to a method of making the device of claim 1, as such these are considered product by process. It is the structural limitations which are claimed not the manner in which the device has been

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made. As such these claims are not considered to be germane to the claim invention and thus not examined.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRACIE Y. GREEN whose telephone number is (571)270-3104. The examiner can normally be reached on Monday-Thursday, 7:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571/272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tracie Y Green/  
Examiner, Art Unit 2879

/Sikha Roy/  
Primary Examiner, Art Unit 2879

